

June 14, 1948.

Test, on T1 + T1h (recd from Kornick):

B/1	T ₁	T _{1h}
	R	S
B/1,5	R	R
B/4	S	S
K-12	S	S
Y40		
W400	R	R

∴ V_{1a}^R in K-12 is not entirely homologous with B/1 either with respect to tryptophane requirement or to sensitivity to T1h.

T1h (10^9) plated with ca 10^8 W400 + 10^8 K-12. Uniform growth of bacteria - 1 possible plaque (v. small) - streaks touch on or w/ W400. No plaques.

Tetrazolium

227

June 15, 1948.

Variations in concentration, in nutrient agar + 1% lactose.

per ml	K-12	S-20.
50r	faint rust	borders of streak + I.C. stained.
100r	beginning red	more thoroughly stained
200r	W.I.C. deeply stained.	" "
500r	" v. " "	" " "

50r + Brilliant Green 25r. — slightly inhibited. A few red resistant.

Variations in nutrient medium - K-12 50r T2 / ml. Agar 1.5% Lactose 1%

1. Peptone 1% WIC faint rust. WIC deeply
2. " 1/2% Some large colonies red. Some WIC deeply.
3. N2ase 1% faint rust. All IC deeply; borders & ends are stained.
4. Casamino Hc 1% All - , except near S-20. All colonies uniformly deeply red.
5. N2Tore 1% → Intermediate between 4 and 3.
6. N2Ammon 1% Well isolated faint rust W.I.C. deeply red.
7. " " A 1%. All colorless All colorless.
- 8.

(4) is the most satisfactory medium we encountered, giving a uniform intense red reaction. 50r may be optimal level. Except for variations in T2 concentration, pH of medium + addition of Brilliant Green.

T2 Reagent for enteric pathogens.

227a

June 17, 1948.

Made up lactose agar with Casamino acids 1%, Yeast Extract .1%
Stock out ① K-12 ② Shigella flexneri ③ Y53 ④ SY-20. P17.

1	2
4	3

N18:

①

②

③

④.

50r T2. faint red over. Most colonies are inhibited but
- Y. Ent. ④ otherwise small, deep red. large, uniform.
white.

50r T2
+ Y. Ent.

As above. K-12 a little redder in this part of the plate, more so.
Shigella much larger.

Gelatoe. All white.

faint pinkish spots.

Meltose. ④ All red. 1 & 2 are faint red in certain colonies (all albinous?).

Selectose. All red. All white.

2% Casamino acids. K-12 colonies more so are red. Y-53 most inhibited, but red.

Brilliant Green 25r All inhibited except SY-20 - good red colonies.

" " 10r All but SY-20 inhibited.

T2 10r. Shigella red + white colonies. Y53 spotty red streaks. SY-20 uniform light dirty red.

T2 25r. As 10, more intense.

T2 50r, peacock green. Like standard.

LacEMB. ① large white ② inhibited ③ + ④ large white.

Grow Y2 broth cultures of: *Salmonella* overnight.

S20

S21 Numerous plaques.

S22

S23

S39

S40

S43

S46 Numerous plaques. (may be confused with S22 strain).

S56.

Sediment most of the cells + heat supernatant 30 m. @ 57° to kill cells.
Spread S36 (*gallinarum*) as N.A. and mix. = 1 dropful of supernatant
to test for lysogenicity.

Use S21 as the standard for possible studies on lysogenicity.
(Mutants can be used on synthetic plates).

Add 2 ml supernatant + 1 drop S36 culture + shake overnight.

Sediment, add supernatant to fresh S36 culture, shake 6 h., sediment
+ filter. = PSS.

June 19, 1948.

spread S47 + S48 on galactose T2, + a few plates each of glucose, mannitol, + gluconate T2.

Cross tests of *Salmonella* phages.

June 17, 1948.

On lac T2 plates, spread 1 drop of φ + 1 drop bacteria.

~~S20~~

S20

S21.

~~Sp-1~~ Sp-1 $10^3 - 10^4$ tiny plaques, but no confluent lysis.

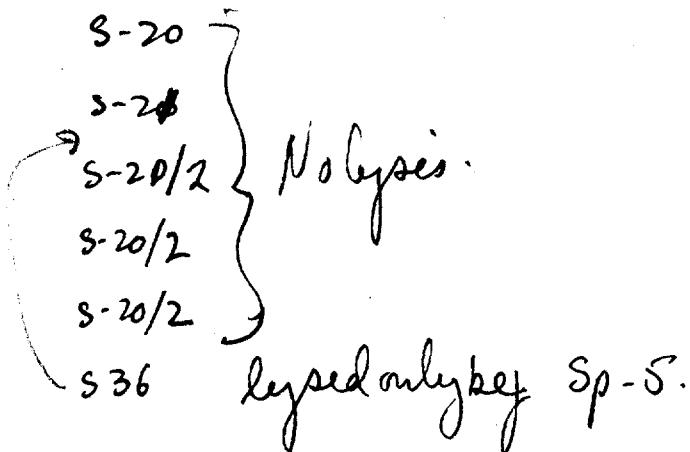
Sp-2 Confluent lysis = a few dozen large red resistant colonies.

Sp-3? Smear areas of lysis.

All plaques are quite small when noted. Recovered large plaqued phage from original streakings from crude phage.

Cross-streak on T2 agar: Sp-1, Sp-2, & Sp-3 + Sp-4φ.

Sp-5, smear on S36 shows no plaques (smearing?) but when streaked exhibits numerous plaques.



June 16, 1948.

Plate 1 deg Y10 + 1 deg (ca 10⁹) phage on EMBLac. (-NaCl!)

T1 Uniform lysis. Ca 200 resistant. Test these on T5, Th.

T2 v. numerous small plaques peripheral; cleared area centrally.

T6 ditto.

T7. Uniform lysis. Ca 100 resistant.

T1+T7. No survivors.

T1+T2. Edges of some colonies irregular. Otherwise like T1 only.

T1+T6. Numerous (ca 50-100) resistant, many with plaques in them.

Omission of salt may have prejudiced these results. Repeat the series & recheck sensitivity to phages.

100 Y10/1 were tested on Th and T5. 99 were resistant to both

I was $T1h^R$; $T5^S$.
Subculture as W-401

= Y10 V_{1a}^R.

June 18, 1948.

Plate 1 drop (= ca 10^8) Y10 + 1 drop (ca 10^8) phage on nutrient agar.

T1. Uniform lysis. G. 300 resists.

T2. Uniform lysis. G. 10-12 (mucoid?) resists.

T3k. U.L. Ca. 10-20 resists.

T4. Uniform lysis. 2 mucoid resists.

T5. U.L. Ca 300 resists.

T6. U.L. Ca 100 resists.

T7. U.L. Ca 200 R. (Spreading contaminant).

T1 + T2. Ca 10-12 R. (Some nibbled).

T1 + T3 1 nibbled resistant

T1 + T4. 2 mucoid resists.

T1 + T6. 1 mucoid; 1 "non"-mucoid resistant (cont?)

T5 + T6 10 mucoid resists.

T1 + T7 1 tiny colony, probably cont.

T5 + T7 No resists

grew out as mucoid bact. → "Purify" as W-402.

pulks 231-1.

pulks as 231-2

did not grow out on bac E M R

[Compare with E. coli B strains, according to Demerec & Luria, the combinations 1,4; 1,5,4; 1,2,3,4,7; 1,2,3,4,6,7 occur with some frequency. The (1,6) combination should be studied more extensively, also using coli B.]

June 19, 1948.

Test Y10/1 m. (nutrient salt agar).

T1h	T5
S	S
R	R 96. all R

Y10/5 m T1 51 all R
Y10

Y10/6 m T2, T4.

5 tested, T2^s T4^s. 18 more tested. T2^s.
 \therefore 21/21 T6^R are T2^s. This differs from (B).

Purify as 231b 1-4. Check for T1 resistance.
 Test on nutrient NaCl Agar (NSA):

	T1	T1h.
W400	R	R
W401	R	S?
-1	R	S*
-2	S	S*
-3	R	S*
-4.	R	S*

(T1-sensitive —)

* These streaks show a heavy underlying layer of growth which may also be infected with plaques. The malus scoring somewhat uncertain. -2 showed complete lysis in the same regions. Strike out this growth as 231b-1A etc.

Tests repeated at room temperature show 231-1 to be completely resistant to T1h ~~all~~, but sensitive to T5, while W400 scores T5^R. Repeat all tests with once purified colonies.

See p. 10.

Purposescoring of K/1 as T1h resistant may have been due to absence of NaCl in the medium.

Strike out the substratum in the streaks of 231-b-3 + 4, T14.

(3) shows considerable lysis in both broad streaks, and suppressed development of some mucoid resists. (4) strikes out well. Purify 4 further & test isolated colonies against T14 and T5.

231b - ~~etc~~ 41 etc.

Test 5 colonies.

T14

S

S

R

R

S

T5.

S

S

R

R

S.

This background is, therefore, for the most part sensitive although lysis may be delayed.

Do not pursue further.

Perhaps plaque formation should be studied quantitatively?

June 21, 1948.

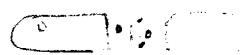
23/b-1, 3+4 form rather small colonies on nutrient gel. Continue purifying them to establish stocks. Re-test isolates on VSA.

	T1	T1h	T5	
W400	R	R	R	
W401	R	S	S	
Y100	R	S*	S	
-1	R	S	S	
-2	S	S	S	
-3	R	S	S	
-4	R	S	S	
-1*	R	S	S	

Has been misclassified.
W -

* from T1 original
test streak.

* Incomplete lysis.



Plaque
tops appear in the
"resistant" section. This may
be due entirely to incomplete absorption
of virus.

Check nutrition of -1, -3 + -4.

1.	T(0)	+ TLB ₁	+ TLB ₁ typ.
	-	++	++
3.	-	+++	+++
4.	-	++	++ ++

June 19, 1948.

Graduate Y10 + Y40 on Star-T2.

Y10 a) 4 seconds $5 \text{ pl.} \times \text{ca } 2000 = 10,000$. Plates very crowded.
 21. ○ all+

b) 5 sec. $10 \text{ pl.} \times \text{ca. } 600 = 6000$.

11. ● All+, rather small cols.

12. ○ All+.

13. ○ W406. Slow+

14. ○ W407 -

15. ○ + and slow+ , do not recover.

16. ○ All slow+

~~17. ○ mostly +; a single - noted W408~~ No mutant.

18. " Slightly slow. do not recover.

19. ○ all+

20. ○ All+.

Y40 a) 4 secs. 4 plates $\times \text{ca } 1000/\text{plate}$. = 4000

8 1. ○ Apparently all+.

7 1. ○ W403

6 3. : 2+ colonies.

b) 5 secs. 9 plates $\times \text{ca. } 500/\text{plate}$ 4500.

5 4. ● ~~W409~~ W408

4 5. ● W405.

3 6. ○ 1 few + colonies.

2 7. ○ Apparently all+; some slow?

1 8. ○ W404 slow fermenter

4 mutants / 8 tested.

Streak out on EMB to find possible mutants.

June 18, 1948.

Plate 320 + 321 = Ps-1, 2 - 3.

Sp-1

Sp-2

Sp-3.

S-20 Ca 10^3 am. plaques. Uniform lysis,
moderate size plaques.

No plaques.

S-21. No plaques. No lysis. A few large plaques.



Phages are therefore specific for S-20 & S-21. Regrow them!

Cross test; streak on plates

	Sp-1	Sp-2	Sp-3	Sp-5
--	------	------	------	------

S-20	R	lytic	R	R
S-21	R	R	R	R
S-36	R	R	R	S
S-20/2	R	R	R	R
"	R	R	R	R

Phages Sp 1-5 grown again on specific hosts in $\frac{1}{2}$ y 2 broth N-P 19.

Spread logeal & sp. host on VSA to get estimate of titer.

Sp 1 - S20. confluent lysis + resistant colonies.

Sp 2 - S20 ditto

Sp 3 - S21 A few dozen large plaques \approx concentric rings.
Titer clearly very low.

Sp 4 - S20 \approx A few very large plaques, with indefinite margins.

Sp 5 - S36 Patchy areas of complete lysis.

See over:

Spread S3G on (1) N.A.

(2). T(B₁).

Suspose:

N.A.

- | | |
|----------|---|
| 1. 8-B-5 | Indefinite zone of lysis & halo clear. |
| 2. s20 | Good growth; sharp margin (Phyto halo ??) |
| 3. s21 | |
| 4. sw7 | |
| 5. sw8 | |
| 6. sw10 | |

T(B₁)_{SP5} Central area of growth; wide halo on margins (3-5 mm).

s20 Good growth. No marginal halo

s21 Marginal halo (ca. 5 mm) discernible.

sw7 No growth; definite marginal lysis; best observed around peripont inoculation.

T5 h.

June 20, 1948.

On NSA, plate "1 drop" each of bacteria + phage.

- (1) Y40 + T5
- (2) Y40 + K-12 + T5
- (3) K-12 + T5.

A 21. (1) Uniform growth.

(3) Uniform lysis + resistant colonies, ca 200.

(2) 2 plates - Uniform growth.

No various mutants of T5 active as Y40 were noted.

35

Lysogenicity of S-21 mutants.

June 20, 1948.

From irradiated T2 plates, pick single colonies of SW-7 and SW-10, in attempt to find non lysogenic colonies. Streak growth directly on a) LacEMB and b) ~~T(B)~~ T(B₁) streaked with SY-36, look for lytic areas or b). Plate 1. SW7. 42 colonies tested. 42 lytic areas.

2. SW7. 42 tested. 41 lytic areas. 1 untested (out of bacterial streak).
 3. SW10 28 tested 25 lytic areas.
 3 not clear, retest.

~~Re-test SW7-3~~

June 22, 1948. Irradiate 10 secs. on LacEMB plates.
 Repeat above procedure.

1. SW7. 62 tested. Carlson lytic. Lytic zones usually somewhat turbid. Occasional clear plaques, probably virulent mutants.

2. SW8 8 colonies ~~which~~ grew on minimal agar. These are barely distinguishable on lac agar. All but one is not lytic. Isolate 1 active, 1 inactive & test for Salmonella. With these exceptions, all of 63 tested are lytic.

3. SW10. 65 tested. All lytic.

4. SW11. None lytic of 65 tested. [Is SW-11 a mutant of SW7?]

Note Note small possible plaque-like areas in the streaks of S21 devi. streaked on lysing S36. (Is S36 lysogenic?)

June 27, 1948.

Repeat expt. on SW8, plates incubated 20 and 30 secs.

Some tests were made by puncturing agar with inoculating needle rather than making a short streak.

109 tests. Each survivor carried intact phage!

June 19, 1948.

Use T2 50R/ml + Casamino 1%, Y. Ext. 1% Sugar 1%.

Incubate all cultures 5 secs. ~~6500~~

Y10. Glucose ca. 500/plate Most colonies dispersed! Occasional wh. cols!

Glucanate 1 plate: central spreading zone of pink colonies; start at
thinnest part of plate

1 plate: uniform white colonies; l. (e) formed. - slow on glucose

wyog

Selectore same plates sl. smudged. Occ. red colonies

10 plates \times > 600 cols. too crowded to read well 1 plated to Gal E4B.

Y10 Glucanate. 2 pl. \times 800 cols. 2 likely mutants. No!

Selectore 10 pl. \times 800

sw7. Glu. Many colonies deep pink. Pick deepest one.

Gal. As above

Mannitol Many colonies bright red!

No other mutants

sw10 Glu. }
Gal } As sw7.
Mannitol }

June 21, 1948.

Plate Y10 with T1b. Test resists on T1 and T5.
70 tested. All were resistant both to T1 and to T5.

58-161 with T1b. Test on T1 and T5.
60 tested. 57 resistant to both; 3 show some action of T5 but not
of T1.

T1b T5.

= 237-1

Plaque ridges; must be sensitive

W-413 237-2

R S } shows a substrate of unlysed cells
W-414 237-3 R. S } similar to that of V_{1a}^R on T1H.

Y10 with T5. Test on a mixture of T1 + T1b.
68 tested All resistant.

Y10 with T2. 1 plate shows half dozen moderately large colonies and
1-200 rather small.

Y10 - T6.

Y10 - T1 + T2 20-30 good sized rough colonies. Several mucoid
~~radiate~~ radiate colonies also noted. Pick + test.

T1 + T6. Several mucoids per plate, only.

W401 plated with T2b. June 26, 1948.

75 resistant colonies picked and tested for T1-resistance.
All 75 colonies were resistant to T1. (cf. Bernia's report that
B1/2b was sensitive.)

Salmonella cross.

SW3 x SW10.

June 19, 1948.

Grow up cultures, wash + spread on T(O) agar.

P21. Pick colonies and streak on Acarmois + ~~Starch~~ Xylose
EMB.

SW3 - numerous colonies. 11 picked X+A+

SW10. 5 picked all X-A-

SW3+SW10. 22 picked. 19 X+A+ 2 X-A- 1 ? (maybe A-X+).

Streakout on acarmois + xylose = 237-1. : Mixture of
A-X- and A+X+.

No Recombination.

	1	2	3	4	5	6	7	
SW11	0	AA3 + ... o	H.C.	Y.Cx.	U,ts.	HCV	Rhamnose.	
	-	-	++	++	-	++	-	H.C.

	1	2	3	4	5	6	7	
SW5.	0.	HC	V	HCV	Y.Cx.	X-1	X-3	Y.Cx.
	-	-	-	-	++	-	-	

~~W93~~ W93 Valine +: 0 + - ± - - - ?

Y132 0 +++ - ++ ++ - - HC.

Arginine +:
20h.

SW11. Grows A3 + A5 or A3 + EA. ∴ Requires either histidine or threonine.

SW11. A3 + H	H	A3
A3 + Th.	Th.	-

V_{1a}^R crosses.

240.

June 23, 1948.

1. W-183 x W-401.

2. Y87 x W-401.

Pick P26 and test sphaerom T1; EMS Lac.

-R	-S	+R	+S.	
3	4	15	5	$\frac{R}{S}$ $\frac{31}{18} \cdot .49$
4	2	9	7	$\frac{+}{-}$ $\frac{36}{13} \cdot .49$
<hr/>				
7	6	24	12	

B-M-Lac- V^S x B+M+T-L-Lac+ V^R Lac = 72%, linked to B1.

V_{1a} = 60% also linked to B1.

Indicated order:

-		$\overbrace{-\quad S}$	+
		Lac	V
+	+	R	-
↑	↑		
-S	+S		
12	24		

But these are not linked to each other! V_{1a} may, then, be to the left of B1!

2 YO.a

①. W401 x W183. T1:

Note: 46+ : 41-

* $T(B_1)$	-R	-S	+R	+S.	
	24	17	36	10.	

$$\begin{array}{r} \\ \hline 14+ : 18- \\ \hline 60 : 59 \end{array}$$

$T(0)!$

4 10 17 1

Ratio should be 80+ : 40 - !

② W401 x Y87.

$T(B_1)$

$T_1 T_5^R V_1^S$

$T_1^R T_5^S$

$T_1^S T_5^S$

Lac-

15

V_1^S

6

24

Lac+ -

17, 24 ok.

Lac+

27

20.

7

13.

47

$V_1^R V_1^S$

42:29 ok.

71

* Nutrition of W401 must be rechecked!

June 28, ct. seq.

①. 58-161 / T1. 100 tested 98 resistant to T1h and TS
2. Scratches
presumably V_{1a}^R.

Purify as w-413 + w-414.

②. 58-161 / T1h. Test on T1 + TS. 56 tested.
IS = 241 - 2

③ w183 / T1h 28 tested. " IS. = 241 - 1.

④. w~~183~~ / T1h. Shows always lysis but lysis finally complete.

Test on T1 + TS. 55 tested.

Many nibbled structures. 10S. (241 - 3 - 12).

	T1	TS	T1		w-415	415
w183.	R	S	R		415	1
58-161	R	S	R		416	2
w-401	R	S	R		417	3
3	R	S	R	plaque-ridden	418	"
4	R	S	R	plaque-ridden	419	5
5	R	S	R			
6	Lysed	S	R			
7	R	S	R		420	7
8	Lysed	S	-			
9.	R	S	R.	A few plaques.	421	9
10.	Lysed	S	R.		422	11
11.	Mucoid	S	R.	but TS ^S !		
12.	Mucoid, TS ^R	S	R.	Lysed		

V_{1,a}^R crosses.

June 27, 1948. Et seq. July 4, 1948.

Ans (S.) unless indicated.

(1) W401 x W-183

(2) W401 x Y87

(3) ~~Y100 x S8-161.~~
Y94 x W-314.

July 6, 1948.

- ① W-183 x W-401 4+ : 3- All T₁- S !
- ② W-415 x W-401 See below.
- ③ W-415 x Y641.

-R	-S	+R	+S.
8	1	10	1

∴ not allelic to V_{1a}

~~(3). all - R, S~~ ; not allelic to V₁ -
~~call this resistance factor carried by W-415 V_{1c}. Its phenotype~~
~~is T₁R T₁hR T₅S.~~ May be allelic to V₁^R

(3). All T₁R. - Some are T₅S.

1. = ϕ_{ONa} 2. = ϕ_{OH} 3 = ϕ_{OGal}

$1/5000$ o-nitrophenols.

July 9, 1948. Beckman Spectroph.

λ	S.W. (nm)	1	2	3
350	.3	.270	.706	.325
340		.217	.669	.431
330	.3	.205	.583	.519
320		.269	.513	.564
310	.32	.418	.571	.559
300	"	.662	.843	.541
290	.37	.930	1.232	.589
280	.4	1.010	1.445	.749
270	.43	.860	1.324	.980
260	.48	.881	.928	1.045
250	.54	1.166 1.157	.570 .571	.860 .887
240	.63	1.84	.570	.819
230	.84	+4	.820	1.158
220	1.2	8	1.446	1.600
215	.9	8	2.25	2.4
210	1.3			
290	.2	.922 .930	1.188 1.173	.590
288		.975	1.238	.611
286		.979	1.290	.630
284		.998	1.331	.658
282		1.005	1.370	.696
280		1.00+	1.39+ (280) 1.403	.735

1. = ϕ_{ONa} 2. = ϕ_{OH} 3 = ϕ_{OGal}

1/5000 o-nitrophenols.
July 9, 1948. Beckman spectrophot.

λ	S.W. (nm)	1	2	3
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280	.4	1.010	1.445	.749
270	.43	.860	1.324	.980
260	.48	.881	.928	1.045
250	.54	1.166 1.157	.570 .571	.860 .887
240	.63	1.84	.570	.819
230	.84	+4	.820	1.158
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288		.975	1.238	.611
286		.979	1.290	.630
284		.998	1.331	.658
282		1.005	1.370	.696
280		1.00+	1.39+ (280) 1.403	.735

		1	2	3
278	,2	,990	1,390	,780
276		,96	1,379	,821
274		,935	1,345	,880
272				,920
270				,970
264				1,045
260				1,037
262				1,040
261				1,044
265				1,038
266				1,027
263				1,040

Tungstenlamp.

340	,18	,276	,672	,447
350	,27	,300	,638	,376
360	,11	,372	,616	,217
370	,09	,509	,530	,130
380	"	,664	,410	,068
390	"	,818	,793	,034
400	,15	,980	,185	,015
410	,05	,979	,180	,011
420	,04	1,088	,053	<0
440	,03	,925	,015	0
460	,03	,603	,03	—

480 .13

500 .02

~~520~~

525

.316

.134

.050

0

.039

0

~~Hg + 1%~~

T2 Medium.

143

To NA-hae-T2, add: 1/50 ml.

		Y10	S20	Y87
①.	5 ml H/10 buffer pH 7.0	-	-	\pm
②	1 ml "	-	+++ uniform!	+++ exc. br. st.
③	.5 ml "	\pm	\pm	\pm
④	Sodium lactate 50% .5 ml	abs. all cult.		
⑤.	CaCO_3 g.s. .1%	-	\pm occ+	\pm occ+
⑥.	Sodium succinate 1g.	\pm	\pm	\pm
⑦.	Asparagine .2g	nils. gr.		
⑧	Na formate g.s. .5%			
⑨.	Methylene blue	-	+	+
⑩	Catal.	-	OH red. col.	+++ occul.

Repeat cultural members. Some numbers rubbed off flask during autoclaving & may be confused. Buffering seems to be the "lead"

July 10, 1948.

N.L.A. + (50 ml.)

Y46 Y87 S20.

1. Buffer pH 7 1 ml 1/10.	- sl. mil. ^{unif.} ++ - not h. sh.
2. Sodium lactate .1 ml 50%	- all out thinest +++ +++
3. Asparagine .2g	- ++ ++
4. Sod. succinate .5g	- light red light red + +
5. Dod. formate 10% 1cc	- mil. ± +
6. —	— - faded in some colonies
7. Buffer 1/10 pH 6.0 1ml	- faded faded
8. " 1/5 pH 6.6 .5ml	- ± faded

addition of sodium lactate seems to be helpful.

July 7, 1948.

Cultivate overnight in YB:

SW-7, SW-12, SW-7 + SW-12.

Wash and plate on T(B,₁):

1. SW-7
2. SW-12
3. SW-7+SW12.
4. (1) + (2).

No colonies (except for obvious contaminants) on any plates. 7/10/48.

July 8, 1948.

Test by cross-streaking.	SP-2	SP-6	Growth in broth
S-20	S	R	R
SW-7	R	S.	S
SW-12.	S	R	R.

∴ 16 is sensitive to SP2, suggesting that we have here smooth + rough phage, as confirmed by growth habits.

Plate #21 c SW12. No plaques noted (e.g. SP 3).

SW3 / SP¹ ultimately gave a fairly dense secondary growth, limited at first to a few colonies.

SW7 / SP⁶ gave a large proportion of resists 1/cle + purify.
(possibly because taken from old culture)

SW3 / SP2 gave a few colonies at margins which are probably sensitive

July 10, 1948.

(1) SW7 x SW12. Grown separately overnight in TB and plated on T(B.).

July 12: colonies noted on X and SW12 plates.

SW12^R. 10 tests all br + sp6^R. SW12 is supposedly br -!
These tests neg.

Mapping the V loci.

249

July 10, 1948.

1. w-112 ($\text{Lac} - \text{V}^S$) X.
1. w-413 (V_{1a}^R) !! No yield! on T(B_1). 17+ : 99 - on LacEMS' Sensitive!
2. w-416 (V_{1c}^R) excellent yield. Test from T(0) + T(B_1) to EMS or EMA'. 7/12
3. Y87 (V_1^R)

①. -: 72 S 1? R
 +: 14 S 0 R.
 W112 S!
 W413 S!
 249-1 → S! from T(0) ALL S : 1+ : 6 -

lysle's very close linkage
 of V_{1a} to B_1 . Check parents:

	$-R$	$-S$	$+R$	$+S$
	11	16	0 * 9	9
T(B_1)	55	83	35	10.

* 9 + colonies
 (not otherwise scored due
 "incompletely" lysed by
 T1 but supported definite
 plaques.)

gives out some strains for further
 identification:

many colonies
 show "partial"
 lysis.

(3)

Many "R" streaks show some signs of lysis within the streak.
The following is offered:

~~-R -S +R +S.~~

S.O.:

1. "-R"
2. "
3. "
4. "
5. + 

Test 5 colonies derived from each.

1. 5 - cultures show fuzzy lysis, some individual plaques slightly fuzzy same for all 2 + 3 cultures.

∴ These crosses could not be scored. Presumably recombinants originate from W416 (V_{1c}^R) which is $T1^R T1h^R TS^S$.

Compare 24961 with W416 and 58-161 \approx , $T1$, $T1h$, TS .

EMS Lac

EMS + TLB,

NSA.

July 10, 1948.

Nutri. Lac Agar + 50 r/ml T2 - + :

	w413	w112	sw 7.
1. -	-	++	++
2. Na lactate .01 ml	-	++	+±
3. .05	-	++ +++ vs.	+++
4. .10	±	+++	+++
5. .50	+ max:	+++	+++
6. 1.0.	anti -	anti anti	anti

11 etc. .1ml lactate

11. -	±	+++	+++
12. + .1ml 1/5 NaOH	-	-	- no inhibition?
13. 1/10 buffer pH 6.0 1ml	±	++±	++±
15. " pH 7.0 1ml smeared.			

Mutation rec: decadiene 58-101 on medium #1. 27 plates.

In many plates, all colonies have red centers. } ca 150/plate.
Pick up those with most intense reaction. } 4000 colonies.

This may be in part an effect of radiation

T1:

R probably contains T.O.

- | | | | |
|----|-------------|----------|---|
| 1. | ● → - | ++ 425 = | R |
| 2. | ● → + and - | w425 | S |
| 3. | ● → all + | | |
| 4. | ● → - | w427 | R |